

WHAT IS CLAIMED IS:

1. The manufacturing method of an electron device, wherein:

5 a photosensitive film provided to the surface of a workpiece to be an electron device is exposed via a mask wherein a phase shifter is partially formed on the flat surface of a transparent plate and a light shielding film made of non-metal is partially provided with the film covering the end of the phase shifter and
10 is developed.

2. The manufacturing method of an electron device according to Claim 1, wherein:

the section in the direction of the thickness of the end of the phase shifter is tapered.

15 3. The manufacturing method of an electron device according to Claim 1, wherein:

the light shielding film is made of dielectric material, high resistance material or organic material.

20 4. The manufacturing method of an electron device according to Claim 1, wherein:

the light shielding film is a photoresist mainly made of novolac resin, phenol resin or polyaniline resin.

25 5. The manufacturing method of an electron device, wherein:

a photosensitive film provided to the surface of a workpiece to be an electron device is exposed via a mask wherein a light shielding film made of non-metal

is partially provided on the surface of a transparent plate on which a concavity or a convexity is partially formed with the film covering the end of the concavity or the convexity and is developed.

5 6. The manufacturing method of an electron device according to Claim 5, wherein:

the light shielding film is made of dielectric material, high resistance material or organic material.

10 7. The manufacturing method of an electron device according to Claim 5, wherein:

the light shielding film is a photoresist mainly made of novolac resin, phenol resin or polyaniline resin.

15 8. A pattern forming method, wherein:
a light shielding film pattern is projection-exposed on a photosensitive film provided on the surface of a workpiece using a mask wherein phase shift means that inverts the phase of exposure light in printing is partially formed on the surface of a
20 transparent plate and the light shielding film pattern made of non-metal is partially provided with the pattern covering the end of the phase shift means and the exposed photosensitive film is developed.

25 9. A pattern forming method according to Claim 8, wherein:

the transparent plate is composed of a transparent substrate and a first transparent film provided on the surface;

the phase shift means is composed of a second transparent film formed on the surface of the first transparent film; and

5 the refractive index of the exposure light in the first transparent film is larger than that of the transparent substrate and is smaller than that of the second transparent film.

10. A pattern forming method according to Claim 8, wherein:

10 the phase shift means has a concavity or a convexity formed on the surface of the transparent plate.

11. A pattern forming method according to Claim 8, wherein:

15 the light shielding film is made of dielectric material, high resistance material or organic material.

12. A pattern forming method according to Claim 8, wherein:

20 the light shielding film is a photoresist mainly made of novolac resin, phenol resin or polyaniline resin.

13. A photomask composed of transparent mask material and light shielding material for shielding exposure light, wherein:

25 the light shielding material is made of photosensitive composition;

the mask material includes a region in which a metallic film is formed; and

a character or a mark for identifying the mask is formed in the region by the photosensitive composition.

14. A pattern forming method, wherein:

5 one photosensitive film provided on the surface of a workpiece is projection-exposed multiply using a first mask wherein phase shift means that inverts the phase of exposure light in printing is partially formed on the surface of a transparent plate and a light
10 shielding layout pattern made of non-metal is provided with the pattern covering the end of the phase shift means and a second mask provided with the same second light shielding layout pattern as the light shielding layout pattern of the first mask and second phase shift
15 means the phase of which is inverse to that of the phase shift means of the first mask and the exposed photosensitive film is developed.

15. The manufacturing method of an electron device, wherein:

20 when the light shielding pattern is printed on the surface of a workpiece to be an electron device using a mask on the surface of which a light shielding pattern made of a photoresist is arranged by projection lithography equipment, the surface of the photoresist
25 is printed without touching the surface to the stage of the projection lithography equipment and its carriage means.